EXHIBIT 11

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Alexandria Division

United States of America, *et al.*,

                              Plaintiffs,

v.

Google LLC,

                              Defendant.

Case No. 1:23-cv-00108-LMB-JFA

Hon. Leonie H. M. Brinkema

EXPERT REPORT OF ROBIN S. LEE, PHD

December 22, 2023

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VII. Google has historically engaged in, and continues to engage in, conduct within and across the relevant markets that excluded and harmed the competitiveness of rivals and potential entrants

(570)   Over the last 15 years, Google has pursued a campaign to obtain, strengthen, and protect substantial market power throughout the open-web display ad tech stack. Although some of its market power may have been obtained through improvements to its existing products, Google has nonetheless engaged in other actions that have preserved its market power by acquiring or excluding rivals, and by frustrating and impeding their efforts to compete for customers.

(571)   In particular, Google has engaged in efforts to leverage its market power in one relevant market to strengthen its position in other markets. By using its position in one market to benefit its products in another, Google reduces demand (i.e., advertiser spending) or supply (i.e., publisher inventory) for rivals in the targeted market, both reducing the competitiveness of these rivals and the likelihood of entry of new ones. Moreover, because of indirect network effects and the need for different ad tech products to interoperate, reducing rivals' competitiveness in the targeted market also reduces the attractiveness of non-Google alternatives in other ad tech product markets.

(572)   In this Section, I examine the competitive effects of five actions that Google has undertaken with its ad tech products. I provide the basis for my opinion that these actions have harmed the competitiveness of rivals and their ability to attract advertiser spending and publisher inventory within the publisher ad server, ad exchange, and advertiser ad network markets. (Later, in Section VIII, I discuss how these actions have preserved and enhanced Google's market power and harmed customers and consumers.)

(573)   Before I examine the competitive effects of Google's five actions, I first provide background context for Google's conduct in Section VII.A.

- I provide an overview of Google's strategy in the ad tech stack since its acquisition of DoubleClick in 2008. This acquisition, which provided Google with its publisher ad sever (DFP) and ad exchange (AdX) products, laid the groundwork for Google's practice of using market power in one relevant market to foreclose rivals and distort competition in favor of its own products in another market. I describe as well the importance that Google placed on controlling the publisher ad server, allowing it to then further protect and enhance its market power across the ad tech stack.

- I also describe how Google viewed yield managers and header bidding tools—which helped publishers access rival non-Google ad exchanges—as "disintermediation" threats to DFP's substantial market power. This discussion, as well as Google's varied responses, shows that

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Figure 62. Google exclusionary conduct timeline
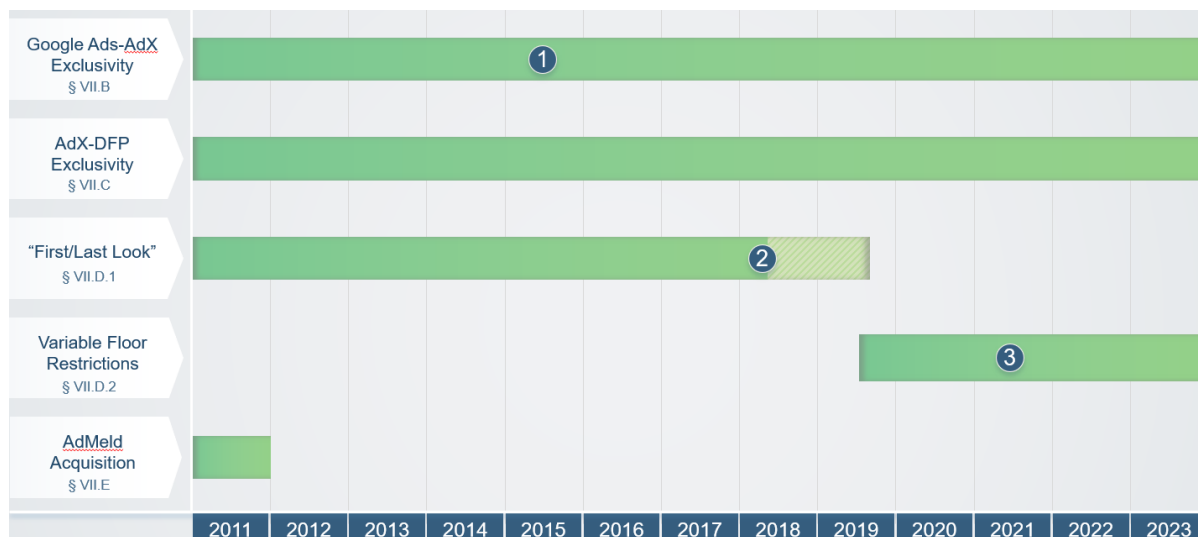
Notes: Green indicates when conduct was in effect (or occurred in the case of the AdMeld acquisition).
1. AWBid exception fully launched in June 2015 (GOOG-AT-MDL-006218271, at -280 (01/06/2023)).
2. Google's Exchange Bidding product that opened up Dynamic Allocation within DFP to rival ad exchanges was launched in April 2018, but began alpha-testing in 2016 (GOOG-AT-MDL-006217592, at -592 and -606 (12/12/2022)). Last look advantages over header bidding exchanges were removed with the introduction of the Unified First Price Auction in September 2019 (GOOG-DOJ-11030354, at -354 (01/28/2019)). Light green shading reflects the period between Google's launch of Exchange Bidding and the introduction of the Unified First Price Auction.
3. Google's June 2021 commitment to the French Competition Authority involved changes to these restrictions "on (at least) an EEA-wide basis" (DOJ-ADS-0000046935, at -935 (06/07/2021)). *See* Section VII.D.2.

(581)   Last, in Section VII.F, I discuss how Google's conduct excluded rivals and harmed their ability to access and compete for open-web display advertising spend and impressions in the advertiser ad network, exchange, and publisher ad server markets. By denying those rivals scale, Google's actions also harmed their competitiveness: as I discussed in Section III.D, scale as measured both by the adoption of an ad tech product and by its usage (which generates data) is important for the competitiveness of ad tech products.

(582)   Importantly, Google's conduct that harmed the competitiveness of rival ad exchanges had the additional effect of also reducing the competitiveness of, and increasing entry barriers for, rival publisher servers. This is because publisher ad servers work alongside exchanges to facilitate open-web display transactions, and publisher ad server competitors are weakened without viable ad exchange partners. Hence, all of the conduct that directly impacted exchanges' competitiveness acted to also preserve and strengthen Google's DFP substantial market power in the publisher ad server market.

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(682)   Note that this exercise likely understates the impact of removing the 5% or 10% Open Bidding fee on rival ad exchanges. The reason is that the simulation holds fixed all other bids and does not account for additional exchanges participating through Open Bidding if Google removed the fee.[981] Such adjustments would likely lead to a much larger shift in transactions won by non-AdX exchanges.

VII.D.1.b. Google's AdX Dynamic Revenue Share program enhanced Google's Last Look advantage

(683)   A May 2014 document described an AdX dynamic revenue sharing (AdX DRS).[982] Similar to Google's buy-side dynamic revenue share programs that I describe in Appendix L.4, AdX DRS dynamically adjusted AdX's standard 20% take rate per-query in order to clear the floor price, and hence win more auctions.[983]

(684)   In the original version of AdX DRS, the take rate was allowed to go between 0 and 20%.[984] As an example, if the top bid into AdX was $1 and the publisher's floor was less than $0.8, AdX would be able to deduct a revenue share of 20% from the $1 bid and still provide the publisher with a bid that clears the floor. If however the publisher's floor—potentially reflective of the highest header bidding bid—was $0.9, AdX under a fixed-revenue share of 20% would not be able to win the auction. However, under AdX DRS, AdX could adjust the revenue share in this auction—here, to 10%—and still win the auction by paying out $0.90 to the publisher and collecting $1 from the winning bidder.

(685)   Google began a 1% experiment in May 2014,[985] and the program launched in August 2015.[986] With this first implementation, the margin AdX charged could only decrease.[987] With AdX DRS v2, launched in December 2016,[988] AdX was able to impose greater-than-20% margins for auctions where this would not alter the outcome in order to bring each publisher's average to its contracted rate.[989] The intuition here was similar to Project Bernanke (see Appendix L.4): by charging lower

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[981]   *See, e.g.,* GOOG-TEX-00082594, at -610–611 (07/30/2015). *See also* GOOG-TEX-00082594, at -611 (07/30/2015) (describing a 0-3% Open Bidding fee leading to "[v]ery quick adoption due to low cost," and "[b]uyers flee AdX"); *see also* Deposition of John Gentry (OpenX), October 26, 2023, 114:12–114:24 ("Q. Why would OpenX prefer to connect to a publisher through Prebid instead of through Google exchange bidding? A. Publishers prefer us to connect -- we would like to get more of their demand through Prebid and not through Google. We also would like to connect through Prebid as it's, in many cases, a client-side implementation, which gives us a view to the page, better data. And then lastly, we don't -- there's not 5 percent taken out of our bid if we go through Prebid and not OB.").

[982]   GOOG-DOJ-06867901, at -901 (05/09/2014).

[983]   In October 2016, Google stopped applying Sell-Side DRS to DV360 (DBM), but continued applying it to third-party AdX buyers. GOOG-DOJ-14734878, at -878 (11/09/2016), GOOG-DOJ-15085583, at -585 (02/22/2017).

[984]   GOOG-DOJ-06867901, at -901 (05/09/2014).

[985]   GOOG-AT-MDL-004111279, at -279 (05/02/2014).

[986]   GOOG-DOJ-15422498, at -398 (08/15/2015).

[987]   Evidence indicates that the average margin reduced to "around 18%." GOOG-DOJ-07330182, at -184 (11/21/2016).

[988]   GOOG-AT-MDL-B-000210650, at -650 (12/07/2016) (The launch status of "Dynamic Revshare v2 on Ad Exchange for AdX Buyers" was changed to "Launched.")

[989]   GOOG-DOJ-14746723, at -724 (06/30/2019), GOOG-DOJ-13221355, at -355 (01/04/2019). *See also* GOOG-AT-MDL-006218257, at -259 (12/16/2022) (publishers were able to disable DRS).

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revenue shares on more "competitive" queries and charging higher revenue shares on less competitive ones, Google could still target a 20% margin overall while winning more impressions. Google documents describing experiments indicate that AdX DRS led to a significant increase in AdX revenues and impressions won by AdX.[990]

(686) Because AdX was provided with the reserve price that it had to clear under Dynamic Allocation, AdX DRS could adjust the take rate in a manner that guaranteed it would win the impression as long as the highest bid within AdX (not accounting for AdX's take rate) exceeded the reserve. In this sense, AdX DRS was a way for AdX to take further advantage of the already existing benefits provided with its exclusive access to Dynamic Allocation, and the associated first- and last-look benefits that it provided.[991]

(687) This characterization is consistent with how a Google employee in a 2017 email described AdX DRS: "AdX gets last look over AppNexus… AdX gets to pay high and win whenever AppNexus is present with a high CPM, and can pay low when AppNexus bids low. AppNexus in contrast can't reliably save money on queries where AdX bids low, because it doesn't know AdX bids… **dynamic revshare is just yet another way for AdX to exploit the last look advantage**."[992]

(688) According to Google, AdX DRS was discontinued in September 2019 following the launch of the Unified First Price Auction.[993]

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[990] GOOG-DOJ-14712011, at -012–013 (12/04/2014) (An email describing an AdX DRS experiment, "seeing a 12% increase in AdX revenue (~$350m ARR) with +11.88% in matched queries…In the medium term, we expect the margin for AdX buyers to settle at 19% and at around 31.15% for AdWords buyers, with profit also going up by about 6% in total from better match rate"); GOOG-DOJ-13235100, at -101 (04/2016) (A Google presentation, "Overall Pub Yield With DRS(V2)", states, "Overall impact: +2.80% lift in publisher revenue including remnant)[.] +4.17% lift in publisher revenue (excluding remnant)[.] +3.54% lift in Google (AdX) revenue[.] +1.82% lift in Google (AdX) profit (net revenue)").

[991] In July 2018, Google introduced a new iteration of Sell-side DRS, known as "truthful DRS" (tDRS): according to Nitish Korula, "tDRS, which launched in July 2018, adjusted AdX's revenue share before sending bid requests to AdX buyers. If tDRS predicted that a buyer would bid above the AdX floor price for an impression (unless that floor price was determined by Google's Reserve Price Optimization program), then Google would take a 20% revenue share for that impression. On the other hand, Google took a 0% revenue share when tDRS predicted that the buyer's bid was likely to be below the floor price. If tDRS predicted that a buyer would be id above the AdX floor for an impression and that floor price was determined by Google's Reserve Price Optimization program, then Google would apply a 20% revenue share to determine the price floor for the AdX auction but take an additional revenue share to make up for reduced revenue on other impressions." GOOG-AT-MDL-008842393, at -403 (08/04/2023) (Declaration of Nitish Korula). *See also* GOOG-AT-MDL-009644404, at tab "Sheet1," row 2 (09/01/2023) ("We would like to launch a new version of DRS to replace existing AdX dynamic revshare. In the new version, the sellside revshare will be determined before collecting bids using ML and will only be applied on reserve prices. By adjusting reserve prices down dynamically we effectively adjust AdX's profit margin from full margin to low margin to match more queries. The lost profit on these transactions will be recollected from the price gap between RPO price (and optionally buyer's self min_payment) and the next highest price (we charge buyer RPO price+revshare and pay publisher less than RPO price).").

[992] GOOG-DOJ-14162326, at -326 (08/11/2017) (emphasis added).

[993] *See* GOOG-AT-MDL-006217592, at -593 (12/12/2022) (Google's response to European Commission's RFI 10 states, "[t]he Dynamic Revenue Share feature was discontinued from September 2019, following the launch of the Unified First Price Auction.").

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using header bidding through other exchanges[1434] and developing a "whitelist for non-HB queries" and restricting DV360 bids to those impressions.[1435]

(55)   Notes from a November 2016 meeting discussing results of experimenting with withholding DBM bids from publishers using header bidding suggest another way to combat the threat of header bidding while minimizing losses to Google: "instead of stop bidding on HB [header bidding] queries, we could bid lower on HB queries."[1436]

(56)   In a 2018 email, an executive states "We already flagged concerns w/ HB back in 2016. The discussion back then led to some sensible changes in EB, the inception of Demand Product [Ad Connector] as well as multiple initiatives in DBM to combat the effects of header bidding, such as first price auction protection [Poirot] (all HB is by definition first price). The combined impact of these were to shift ~500M spend inventory."[1437]

(57)   According to this email, Google's collective responses to header bidding shifted a significant amount of ad spending. I discussed Demand Product above in Section K.3. Below, I provide background for Project Poirot, which I discussed in Section V.C.1.

(58)   **Project Poirot.** Google introduced the first version of Project Poirot in July 2017 as "Optimized Fixed CPM Bidding"[1438] to address the possibility that third-party ad exchanges were claiming to run second-price auctions but in fact were running non-second-price auctions, such as first-price auctions or auction variants that employed so-called "soft floors."[1439] Project Poirot launched an "algorithmic framework to detect and quantify deviations from second price auctions using DBM [DV360] data" and used this framework as an input to optimize bids in order to win the same impressions at lowest price."[1440]

(59)   Google documents indicate that one goal for Project Poirot was to increase advertiser surplus by "shading" advertiser bids on third-party exchanges that did not run second price auctions. An April 2017 Google slide deck states, "The goal of Poirot is to discover the exchanges that deviate from second pricing and bid appropriately on these to improve advertiser performance on these

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[1434] GOOG-TEX-00094226 at -227, (11/10/2016).

[1435] GOOG-TEX-00104467 at -467, (10/28/2016).

[1436] GOOG-TEX-00094226 at -227, (11/10/2016).

[1437] GOOG-DOJ-09429825, at -825. (03/16/2018) (Tobias Maurer, emphasis in original). Within the email chain, Google Executive Payam Shodjai notes, "The problem isn't so much that DBM is buying HB inventory -- the problem is that HB exists :)… Since DBM is the largest buyer on many exchanges, we are also the largest buyer of HB inventory, because there's is no way for us to discriminate HB vs non-HB inventory. So for DBM to stop buying HB inventory would mean DBM stops buying on third-party exchanges. This is something we can certainly discuss." (at -825 - 826).

[1438] GOOG-DOJ-08129106 at -106, (06/15/2017) (calling Poirot "Optimized Fixed CPM Bidding" and noting that it will be launched gradually, with full launch in four weeks).

[1439] GOOG-DOJ-05282625, at -631–645 (10/04/2018). *See also* Section III.E for a discussion of auction concepts, including first-price and second-price auctions and soft floors.

[1440] GOOG-DOJ-05282625, at -636–637 (10/04/2018).

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first version imposed the constraint that no publisher would lose more than 10% from its payout under Bernanke.[1480]

(81)   The first version of Project Bell thus provided Google with the ability to adjust Google Ads' margins across publishers, so that some publishers would receive lower payouts from AdX when Google Ads won (by charging a higher Google Ads margin), and other publishers would receive higher payouts, subject to a payout constraint.

(82)   According to a declaration from Nirmal Jayaram, Senior Director of Engineering at Google, a modified version of Global Bernanke, "referred to internally as 'Bell v.2.'," launched in October 2016 that focused on "the detection and management of multiple calls":[1481]

> Bell v.2 changed Google Ads' bidding behavior only for the publishers that were understood, based on internal experiments, to be calling AdX multiple times for the same potential ad opportunity ("multi-calling publishers")… Bell v.2 changed Google Ads' bidding behavior for multi-calling publisher as follows: (1) Google Ads disabled Bernanke when bidding on multi-calling publishers' inventory, (2) Google Ads set a limit on how high it would bid based on its bids from the prior week and also an absolute cap on how high it would bid, and (3) Google Ads would not buy inventory from multi-calling publishers via third-party exchanges. […]
>
> To encourage them to reduce usage of multi-calls, Google communicated with multi-call publishers that Google Ads would be making some changes to how it submitted bids in response to multi-calling.

(83)   Consistent with Google altering Ads' bidding behavior to change publishers' behavior, in an email chain beginning in February 2017, Google executive Bryan Rowley wrote about a publisher, "they should realize that AdX is still the only source to get access to all of GDNs demand. If they chose another monetization partner they loose [sic] access to all of GDN," and another employee responded, "this partner is a bit reluctant, but seems we are on a good way to get them to stop mediating."[1482] Later in the same chain, in April 2017, Mr. Jayaram wrote that "wp.pl was one of the biggest

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[1480] GOOG-DOJ-AT-02471194, AT -194 (07/26/2015) GOOG-DOJ-03901693, at -702 (11/2014).

[1481] GOOG-AT-MDL-008842383, at -386–387 (08/05/2023) (Declaration of Nirmal Jayaram, August 5, 2023, "Global Bernanke was subsequently updated in October 2016. This update, relating to the detection and management of multiple calls, was sometimes referred to internally as 'Bell v.2.' Under Bell v.2, Google Ads would modify its bidding behavior (to decrease bid variance) when receiving multiple calls for the same ad request to protect advertisers from the risk of price inflation. A 'call' refers to a publisher's request that an ad exchange supply an ad to show in response to a specific ad opportunity when a user has navigated to the publisher's property. Some publishers would call an ad exchange, such as AdX, multiple times for the same potential ad opportunity.").

[1482] GOOG-DOJ-15443001, at -002 (02/20/2017).